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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* GEORGE GAO, CUVE WILLIAM REED,  
THANGAVELU ASOKAN, PAUL ALFRED SIEMERS, and  
SANTANU SINGHA

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Appeal 2010-001578  
Application 10/686,290  
Technology Center 2800

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Before JOHN A. JEFFERY, CARLA M. KRIVAK, and  
CARL W. WHITEHEAD, JR., *Administrative Patent Judges*.

JEFFERY, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's rejection of claims 1-4, 6-8, and 29-44.<sup>1</sup> We have jurisdiction under 35 U.S.C. § 6(b). We affirm.

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<sup>1</sup> Although Appellants request our guidance on the finality of the previous Office Action (App. Br. 7), this is a petitionable matter and therefore not before us. *See* MPEP § 706.01 (“[T]he Board will not hear or decide issues pertaining to objections and formal matters which are not properly before the Board.”); *see also* MPEP § 1201 (“The Board will not ordinarily hear a question that should be decided by the Director on petition . . .”).

## STATEMENT OF THE CASE

Appellants' invention is an insulation system for use in oil-filled environments such as transformers. The system employs insulating units that have two layers of material—one polymeric layer and one paper layer. *See generally* Spec. ¶¶ 0001, 0028, and 0030. Claims 1 and 33 are illustrative with key disputed limitations emphasized:

1. An insulation system for an oil filled environment comprising:  
a plurality of insulating units, *each of said plurality of insulating units comprising a first layer of polymeric material and a second layer of non-polymeric material*;

said insulating units positioned with respect to each other such that said second layer of non-polymeric material of one insulating unit is adjacent to said first layer of polymeric material of another insulating unit.

33. An insulation system for an oil filled environment comprising:  
a plurality of *alternating* layers of polymeric and non-polymeric materials.

The Examiner relies on the following as evidence of unpatentability:

Schroeder	US 4,095,205	June 13, 1978
Kurita	JP 2001196241 A	July 19, 2001

## THE REJECTIONS

1. The Examiner rejected claim 33 under 35 U.S.C. § 102(b) as anticipated by Kurita. Ans. 3.<sup>2</sup>

2. The Examiner rejected claims 1-4, 6-8, and 29-44 under 35 U.S.C. § 103(a) as unpatentable over Schroeder and Kurita. Ans. 3-4.

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<sup>2</sup> Throughout this opinion, we refer to (1) the Appeal Brief filed February 1, 2007; (2) the Examiner's Answer mailed June 28, 2007; and (3) the Reply Brief filed August 2, 2007.

### THE ANTICIPATION REJECTION

The Examiner finds that Kurita discloses every recited feature of claim 33. Ans. 3. Appellants argue that Kurita does not disclose alternating layers because Kurita only discloses two layers of insulation. App. Br. 8-9; Reply Br. 1-2.

The issue before us, then, is as follows:

### ISSUE

Under § 102, has the Examiner erred in rejecting claim 33 by finding that Kurita discloses *alternating* layers of polymeric and non-polymeric materials?

### FINDINGS OF FACT (FF)

1. Kurita's Figure 1 shows an insulation system comprising a layer of polypropylene next to a layer of Kraft paper.<sup>3</sup> Kurita ¶¶ 0011-12; Fig. 1.

### ANALYSIS

The anticipation rejection in this appeal turns on one term—"alternating." Although Appellants cite various passages of the Specification in connection with this term (App. Br. 9), they do not mention the term "alternating," but rather describe exemplary systems with more than two layers of insulation. Spec. ¶¶ 53, 56; Figs. 2, 4. While we read the claims in light of the Specification, "a particular embodiment appearing in the written description may not be read into a claim when the claim language

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<sup>3</sup> We refer to the English language translation of this document (PTO 09-7805) entered in the record on June 28, 2007.

is broader than the embodiment.” *SuperGuide Corp. v. DirecTV Enterprises, Inc.*, 358 F.3d 870, 875 (Fed. Cir. 2004). Moreover, the Specification does not confine the invention to more than two layers of insulation. Paragraph 53 provides that “although this one example shows five insulating units [wherein an insulation unit comprises two layers], an insulation system of the present disclosure may have more *or less* insulation units.” Spec. ¶ 53 (emphasis added).

To construe the adjective “alternating,” we look to the related adjective “alternate,” which means “one following the other in succession of time or place.”<sup>4</sup> Accordingly, claim 33 only requires one layer of either polymeric or non-polymeric material to be followed by a second layer of material of the other type. It does not require that the pattern of alternating layers be repeated any particular number of times. Claim 33 is thus broader than Appellants’ cited examples, and does not preclude an insulation system with only two layers—one polymeric layer followed by one non-polymeric layer. Kurita discloses this feature. *See* FF 1. Given our construction of claim 33, we need not address Appellants’ arguments regarding the Examiner’s finding that Kurita may include more than two layers of insulation. Reply Br. 1-2.

We are therefore not persuaded that the Examiner erred in rejecting claim 33.

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<sup>4</sup> WEBSTER’S REVISED UNABRIDGED DICTIONARY (1913), *available at* <http://www.machaut.uchicago.edu/websters>.

### THE OBVIOUSNESS REJECTION

The Examiner finds that Schroeder discloses every recited feature of representative claim 1 except for insulating units comprising a first layer of polymeric material and a second layer of non-polymeric material, but cites Kurita as teaching this feature in concluding that the claim would have been obvious. Ans. 3-4.

Appellants argue that Kurita does not teach an insulating unit—let alone plural insulating units—having alternating polymeric and non-polymeric layers because Kurita only teaches a single polypropylene layer and a single kraft paper layer. Thus, Appellants argue, there is no suggestion to perform multiple replacements of Schroeder's polyethylene terephthalate layers with Kurita's kraft paper layer to achieve the claimed plural insulating units. App. Br. 10; Reply Br. 3-4.

The issue before us, then, is as follows:

### ISSUE

Under § 103, has the Examiner erred in rejecting claim 1 by finding that Schroeder and Kurita collectively would have taught or suggested plural insulating units each comprising a first layer of polymeric material and a second layer of non-polymeric material?

### ADDITIONAL FINDINGS OF FACT

2. Schroeder uses a number of polyethylene terephthalate film layers 42 between two wholly aromatic polyamide fiber paper layers 40 and 44 as insulation in a transformer. Schroeder, col. 7, ll. 24-49; Fig. 2.

3. Schroeder discloses that cellulosic materials such as Kraft paper have been widely used as insulation in transformers due to their “low cost and excellent insulating characteristics when impregnated with a liquid insulating dielectric, such as transformer oil.” Schroeder, col. 2, l. 63-col. 3, l. 2. Schroeder also discloses that “the electrical insulating qualities and mechanical strength of the cellulosic insulation deteriorate rapidly at temperatures above 100° C.” Schroeder, col. 3, ll. 2-5.

4. Kurita discloses that Kraft paper has higher oil resistance than polypropylene. Kurita ¶ 0015. Kurita discloses that polypropylene has higher tensile strength than Kraft paper. Kurita ¶ 0012. Kurita also discloses that plastic films other than polypropylene have relatively high tensile strength and may be used in place of polypropylene. Kurita ¶ 0014.

### ANALYSIS

Based on the record before us, we find no error in the Examiner’s obviousness rejection of representative claim 1, which recites, in pertinent part, each of a “plurality of insulating units comprising a first layer of polymeric material and a second layer of non-polymeric material.”

Schroeder uses multiple pairs of polyethylene terephthalate film layers between two polyamide fiber paper layers as insulation in a transformer. Ans. 3-4; *see* FF 2. Kurita’s insulation system uses both a polypropylene, or other plastic layer and a Kraft paper layer. Ans. 4; FF 1. Kurita’s

alternation of plastic and Kraft paper is based on balancing the advantages and disadvantages of each material when used as insulation in a transformer. *See* FF 4. In view of Kurita, one of ordinary skill in the art would have found it obvious to substitute every other polyethylene terephthalate layer in Schroeder with Kraft paper, as the Examiner proposes. Such an enhancement merely predictably uses prior art elements according to their established functions—an obvious improvement. *See KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 401 (2007). Appellants have not provided evidence that such a substitution is beyond the level of ordinary skill in the art.

Nor have Appellants argued that the Examiner’s combination would render Schroeder’s system inoperable for its intended purpose. Nevertheless, Schroeder does caution away from using Kraft paper at temperatures above 100° C. FF 3. But below this temperature, there are well-known benefits to using Kraft paper as insulation. *See id.* Moreover, Schroeder’s system is itself only intended to operate within certain boundaries because polyethylene terephthalate breaks down at temperatures above 220° C. *See* Schroeder, col. 3, ll. 32-34. Absent evidence that using multiple insulation units each comprising a layer of polyethylene terephthalate and a layer of Kraft paper would render Schroeder inoperable for any practical operating range, we cannot say that the Examiner’s combination is improper.

We are therefore not persuaded that the Examiner erred in rejecting representative claim 1, and claims 2, 4, 6-8, and 29-44 not separately argued with particularity.



Regarding claim 3, Appellants argue Schroeder and Kurita collectively fail to disclose an insulation system with at least five layers of insulating material—that is, at least two insulating units each comprising alternating polymeric and non-polymeric layers, and a terminal paper layer. App. Br. 11-12. We find Schroeder and Kurita collectively at least suggest the claimed plural insulating units for the reasons discussed above. Further, Schroeder discloses a terminal paper layer—polyamide fiber paper 44. FF 2. We are therefore not persuaded that the Examiner erred in rejecting claim 3.

### CONCLUSION

The Examiner did not err in rejecting claim 33 under § 102, and claims 1-4, 6-8, and 29-44 under § 103.

### ORDER

The Examiner's decision rejecting claims 1-4, 6-8, and 29-44 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

gvw